(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 186 787 A1

(12) EUROPEAN PATENT APPLICATION

published in accordance with Art. 158(3) EPC

(43) Date of publication:
13.03.2002 Bulletin 2002/11

(21) Application number: **00912665.7**

(22) Date of filing: **24.03.2000**

(51) Int Cl.[7]: **F16B 5/06**, B60R 13/02

(86) International application number:
PCT/ES00/00106

(87) International publication number:
WO 01/71201 (27.09.2001 Gazette 2001/39)

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(71) Applicant: **Grupo Antolin-Ingenieria, S.A.**
09007 Burgos (ES)

(72) Inventor: **ROMERO MAGARINO, Antonio**
E-09006 Burgos (ES)

(74) Representative: **Carpintero Lopez, Francisco**
HERRERO & ASOCIADOS, S.L.
Alcalá, 35
28014 Madrid (ES)

(54) METAL-PLASTIC STAPLE FOR FIXING VEHICLE ROOFS AND ACCESSORIES TO THE BODY OF A VEHICLE

(57) The metallo-plastic clip comprises a clip (1) and a plastic shank (2) of which is part the corresponding accessory (3) to be placed in an opening provided on the vehicle body, with an interposed vehicle roof. Clip (1) is provided with flexible flaps (4) with a bend (9) after which there is a lower segment (12) of maximum size-with a notch (10) for attaching said clip to the opening of the vehicle body, while in a central area said flexible flaps (4) are provided with a cut without loss of material forming sectors (22) projected towards the centre and with rounded corners which allow passage between them, with their corresponding lateral displacement and thereby also of flexible flaps (4), of any tool in order to free clip (1) from shank (2). The maximum size of upper segments (12) and therefore of notch (10) for attaching clip (1) is obtained by a bend of lateral sectors (6) which form part of clip (1) itself, above the bend (9) of the corresponding flexible flap (4), with these sectors projecting inwards and ending in the end extensions (15) for support of the clip on the vehicle roof.

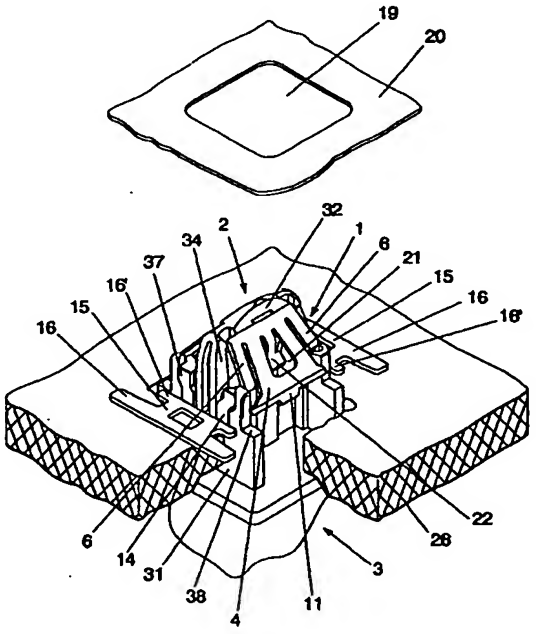

Fig. 5

EP 1 186 787 A1

Description

OBJECT OF THE INVENTION

[0001] The invention relates to a means for attaching certain internal accessories of a vehicle to its body, with an intermediate panel or lining which makes up the roof and which acts as a self supporting element, which means consists of a metal clip suitably coupled to an opening provided for such purpose in the vehicle body, so that it may be removed , and a plastic shank of which is part of the accessory, which shank may be coupled to the clip forming a set which is securely attached to the vehicle body, with the intermediate lining or roof, and with the accessory which the shank is part of, on the inside of the vehicle.

[0002] The object of the invention is to provide a clip with structural characteristics which allow to remove it from the shank without the need of special tools. A further object of the invention is to provide a shank obtained by injection together with the accessory, so that it is sturdy and with guides of a suitable size next to the corners, allowing the length of support of the resulting flexible flaps of the clip to be maximum, thus also providing a contact and guidance area on the shorter sides of the car body opening, all of this providing a maximum stability in assembly and coupling of the set.

BACKGROUND OF THE INVENTION

[0003] Spanish Invention Patent P 9700867 and its addition 9800689 describe a means for attaching accessories to a car's body using a suitable coupling between a metal clip attached to an opening provided in the car body and a shank which bears the accessory and designed to be attached to the clip, with an intermediate panel or lining of the vehicle roof, so that as the accessory is attached the corresponding area of the roof lining is also attached.

[0004] Said attachment means described in the aforementioned Spanish Invention Patent and its addition is characterised in that the clip is constructed as a body with two lateral parts and a flexible flap in each part, and collaterally a side sectors which extend into lower and end segments which converge slightly upwards and outwards, so that the flaps, at the level of a bend made in each one, are provided with a notch by which the clip is attached to the opening provided in the vehicle body, as the notch is engaged in the corresponding side edges of the opening, while the lateral extensions provide the support surface for the inner face of the vehicle roof or lining, as said roof must be interposed between the lateral extensions of the clip and a base of the shank which is coupled and retained by the clip.

[0005] In this structure of the clip and shank described in Spanish Invention Patent 9700865 and addition 9800689 there are parts and elements which must perform such functions as allowing the coupling, fitting and locking between the clip and the shank, as well as allow their detachment from each other, so that the size of the flexible flaps and therefore of the longitudinal notch which they have for attachment of the clip on the opening of the car body, is limited because between the side edges of the flaps and the sectors on whose lower segments run the side extensions there is a great separation in order to allow to place walls provided in the shank.

[0006] In addition, on order to detach the shank and clip in order to remove the accessory the shank must have an inner tubular structure through which a special tool may be inserted and the top edges o the clip separated, freeing the shank. In other words, this detachment cannot be achieved with any tool, requiring a special tool..

DESCRIPTION OF THE INVENTION

[0007] The metallo-plastic clip object of the invention solves the above described problem by means of improvements made in both the clip and shank which not only provide a larger notch in the flexible flaps for attaching the clip to the body opening and allow the use of any tool to detach the clip and shank, but also provide greater stability to the set and a sturdy and reliable attachment.

[0008] More specifically, one of the improvements consists in that the side sectors of the flexible flaps instead of being bent at their bottom are bent at an intermediate level, above the bend of the flexible flaps, so that the bend of these side sectors projects inward and then after a further 90 degree bend project outward, forming lateral vertical extensions which join at an angle with the end segments where the clip rests on the vehicle roof. This novel construction of the aforementioned parts gives rise firstly to horizontal supports at the level of the first bend of the side sectors, which supports are meant to be placed on corresponding surfaces provided for such purpose in the sides of the shank, and furthermore, allow the lower end segment of the flexible flaps to have a greater length and thereby a longer notch, which allows an improved attachment of the clip on the opening of the vehicle body.

[0009] A further improvement consists of the flexible flaps being provided with a cut without any material being lost, which determines on each flexible flap an inwardly projecting segment bent near its lower free end, from where it then diverges, so that the bends are left facing each other allowing the insertion between them of any expansion tool which separates the flexible flaps, as it naturally will act on the bends of these internal segments which are part of the aforementioned flaps, allowing detachment from the shank.

[0010] A further improvement, in this case made on the shank, consists in its structure comprising a bridge whose top part ends as a spindle, allowing insertion between the opposing ends provided for this purpose in the top part, so that between the sides of this tapering

top part and the bridge are provided stirrups in which said top opposing edges insert, while on the side there are sockets with resting points for the horizontal surfaces which are supported on the vehicle body. Above these sockets are supports for the planes defined by the first bend of the side segments of the clip, as well as side recesses for placing the lateral and vertical projection of the side segments.

[0011] Additionally, said shank sockets are located as far as possible towards the ends of the opening of the vehicle body, and between its side supports and the supports for the clip side segments there are centering guides, also located as near as possible to the corners of said opening, in order to provide a great stability to the attachment means, as well as an anti-rotation effect with respect to the perpendicular axis of the opening.

DESCRIPTION OF THE DRAWINGS

[0012] These and further characteristics of the invention will be more clearly understood in view of the accompanying drawings of a preferred embodiment, where for purposes of illustration only the following is shown:

Figure 1.- Shows a plan view, a front elevation view and a side elevation view along a semi section of the clip which is the object of the invention.

Figure 2.- Shows a general perspective view of the clip shown in the previous figure.

Figure 3.- Shows a perspective view of the shank meant to insert in the clip shown in the previous figures, where the corresponding accessory is part of said shank.

Figure 4.- Shows a perspective view of the coupling between the clip and the shank of the previous figures.

Figure 5.- Shows the set shown in the previous figure mounted on the lining or roof of a vehicle, where said roof or lining acts as a self supporting element of the set, all to be assembled on the corresponding opening made for such purpose in the vehicle body.

Figure 6.- Shows a sectional view of the assembly set shown in the previous figure.

Figure 7.- Shows a further sectional view similar to that of the previous figure, showing an expansion tool in the insertion stage prior to being used to separate the flexible flaps which free the clip from the shank.

Figure 8.- Shows a further sectional view similar to that of the previous figure, with the expansion tool separating the flexible flaps and freeing the clip from the shank

Figure 9.- Shows a perspective view of the clip as in figures 1 and 2 but with the end support segments shortened.

Figure 10.- Finally shows a schematic plan view of the assembly of the set of clip and shank on the opening provided in the vehicle body, showing the contact areas and centering of the shank, and the long support surface of the clip notches on the edges of the opening.

PREFERRED EMBODIMENT OF THE INVENTION

[0013] As may be seen in the figures, the metalloplastic clips for attaching roof vehicles and accessories to a vehicle body, comprising a clip (1) and a shank (2) of which is part the corresponding accessory (3), as seen in figure 4.

[0014] Clip (1) comprises two lateral flexible flaps (4) with a mainly trapezoidal shape, although on the bottom it is rectangular, which flaps (4) are attached through an upper longitudinal band (5) to corresponding side sectors (6) with each clip provided with four sectors (6). On the top bands (5) common to the flexible flaps and the lateral sectors (6) define opposing edges (7) which previously are provided with a rounded bend (8) as shown in figures 1 and 2.

[0015] Near their bottom edge flexible flaps (4) are provided with a double bend (9) between which bends is defined a segment provided with a notch (10) and in correspondence with the bottom edge are provided tabs (11), two on one side and a single tab (11) on the other. After the first bend (9) of flexible flaps (4) the latter expand and define a rectangular segment (12) of a greater sizeabove which are lateral sectors (6). Said rectangular segment (12) does not represent an obstacle for sectors (6) as the latter have a first bend (13) above the plane of the start of bend (9) of flexible flaps (4), so that after said first bend (13) sector (6) projects inwards to again bend in a right angle with respect to the prior one and project outwards, after which a vertical segment (14) extends downwards and separated from the ends of horizontal segment (12) corresponding to flexible flaps (4), so that said vertical segment (14) of each sector (6) again bends on its bottom to define, together with that of the other lateral sector, end extensions (15) with projections (16-16') the first wider and longer, with an intermediate line (17) through which extensions (15) may be eliminated, remaining only the part of extension (15) bearing extensions (16') as shown in figure 9, where the clip is shortened, which may be of great use in certain applications.

[0016] Between the first bend (13) and the second of sectors (6), horizontal support planes (18) are defined, the purpose of which will be described later.

[0017] As may have been observed, the fact that the bends of lateral sectors (6) begins at a greater height and that they are projected inwards and outwards allows the bottom rectangular segment (12) of flexible flaps (4) to attain a greater width, and thereby also notch (10) provided for insertion in opening (19) made for such purpose in the vehicle body (20), in order to obtain a better locking of clip (1) in opening (19) as said locking shall be determined by notch (10) of each flexible flap (4).

[0018] As may be seen in the figures, flexible flaps (4) of clip (1) diverge downwards from their top opposing ends (7), with lower tabs (11) also diverging and projecting outwards after the aforementioned bends (9).

[0019] These flexible flaps (4), in addition to the above described characteristics, are provided in a central area with a slit which defines an opening (21) with a preferably trapezoid shape, without loss of material, determining segments (22) which project inwards, with a shape such that after a bend (23) they end in a outwardly diverging segment (24), with bends (23) facing each other, the purpose of which shall be described later.

[0020] As relates to shank (2), of which accessory (3) is a part, which is obtained from plastic by simultaneous injection of both elements, it includes a base (25) which upon mounting on the vehicle body is placed beneath the corresponding lining or roof (26), while on the latter's top surface are attached end extensions (15) with their extensions (16-16'), as shown in figure 5..

[0021] Said shank (2) comprises a bridge (27) under which is defined an opening (28), with walls (29) collateral to which are plates (30), and on the sides are sockets (31) as separated as possible, as shown in figures 3 and 6.

[0022] The top of upper bridge (27) of shank (2) has a tapering shape (32) in order to aid in insertion of clip (1) when the latter's edges (7) slide on planes (32) which define said spindle-like shape, with aforementioned edges (7) locked under stirrups (33) made for such purpose in bridge (27).

[0023] In said shank (2) are defined lateral supports or columns (34) which act as guides for shank (2) as it is inserted, with walls provided with plates (30) and sockets (31), and supports (35) for support planes (18) of the clip (1), also shown in figure 3, opposite columns (34); on the top of sockets (31) are recesses (36) meant to house segments (14) which are extensions of lateral sectors (6) of clip (1). Additionally, in these columns or top part of their sockets (31) are defined centering guides (37) with the corresponding opening (19) for the vehicle body (20), further including four supports (38) in correspondence with the top edge of sockets (31) and whose support points (38) comprise the support means for the shank (2) on the vehicle body (20).

[0024] With the set placed on opening (19) of body (20) and clip (1) attached through notches (10) of flexible flaps (4) in the edges of said opening (19), in order to detach accessory (3) it is necessary to unlock clip (1) from shank (2), for which a tool (39) is inserted in opening (28) of shank (2), so that the end of this tool (39) eventually meets diverging segments (24) of the corresponding sectors (22) of flexible flaps (4) of clip (1), so that by continuing to move said tool (39) upwards the segments (22) will be separated as their bend (23) is pressed, resulting in the flexible flaps separating and thereby the displacement of their edges (7) with respect to stirrups (33) of shank (2), releasing the latter and allowing to pull on it, thus detaching the accessory, all of this so that assembly takes place by simply pressing upwards with shank (2) and accessory (3) until it locks in clip (1), as shown in figure 6.

[0025] In order to release clip (1) it is enough to press together tabs (11) using pliers or any other suitable tool, freeing them from opening (19) of body (20).

Claims

1. Metallo-plastic clip for attaching vehicle roofs and accessories to the body of a vehicle, comprising two units which may be coupled to each other, one of which is the metallo-plastic clip itself (1) and the other a shank (2), the former attachable to an opening (19) of a vehicle body (20) through notches (10) provided in flexible lateral flaps (4) which are complemented by external sectors (6) of the sides of said clip, and which sectors (6) are joined continuously to end extensions (15) for support on the corresponding roof (26) under which will be placed accessory (3), which forms part of shank (2) coupled to clip (1), with the entire set locked in opening (19) of the vehicle body (20), **characterised in that** sectors (6) provided on either side of flexible flaps (4) of clip (1) have an initial bend (13) at a position above that of a bend (9) of flexible flaps (4), from which bend (9) is defined a rectangular lower segment (12) of maximum size, providing an also maximum size for notch (10) used to lock clip (1) n opening (19) of vehicle body (20); with flexible flaps (4) also provided with a trapezoidal cut without loss of material, defining corresponding segments (22) projecting inwards and provided with a rounded bend (23) after which appear diverging segments (24), allowing the use of a conventional tool (25) to separate opposing edges (7) of the top part of clip (1) by which shank (2) is attached.

2. Metallo-plastic clip for attaching vehicle roofs and accessories to the body of a vehicle, as claimed in claim 1, **characterised in that** after bend (13) of lateral sectors (6) of clip (1) there is defined an inwards projection, and after a 90 degree bend with respect to the inside there is an outwards projection, with a further bend defining an external vertical segment (14) which is separated from the side edges of lower segment (12) with a larger flexible flap (4), and with a horizontal surface (18) defined between

the initial bends of sector (6) which rests on the corresponding support (35) provided for such purpose in the side walls of clip (1).

3. Metallo-plastic clip for attaching vehicle roofs and accessories to the body of a vehicle, as claimed in above claims, **characterised in that** shank (2) comprises a bridge (27) with a tapering top part defining two upwardly converging planes (32) on which slide the top opposing edges (7) of clip (1), with shank (2) provided with stirrups (33) on which lock said edges (7), thus attaching the two elements.

4. Metallo-plastic clip for attaching vehicle roofs and accessories to the body of a vehicle, as claimed in above claims, **characterised in that** side walls (34) of shank (2) define a lower socket (31), as well as recesses (36) for placing vertical segments (14) which are extensions of lateral sectors (6) of clip (1), and on whose side columns (34) are similarly defined guides (37) and supports (28) for shank (2) on the vehicle body (20).

5. Metallo-plastic clip for attaching vehicle roofs and accessories to the body of a vehicle, as claimed in above claims, **characterised in that** shank (2) is attached with side columns (34) and sockets (31) to base (25) from which the corresponding accessory (3) projects, by means of walls (29) complemented by plates (30).

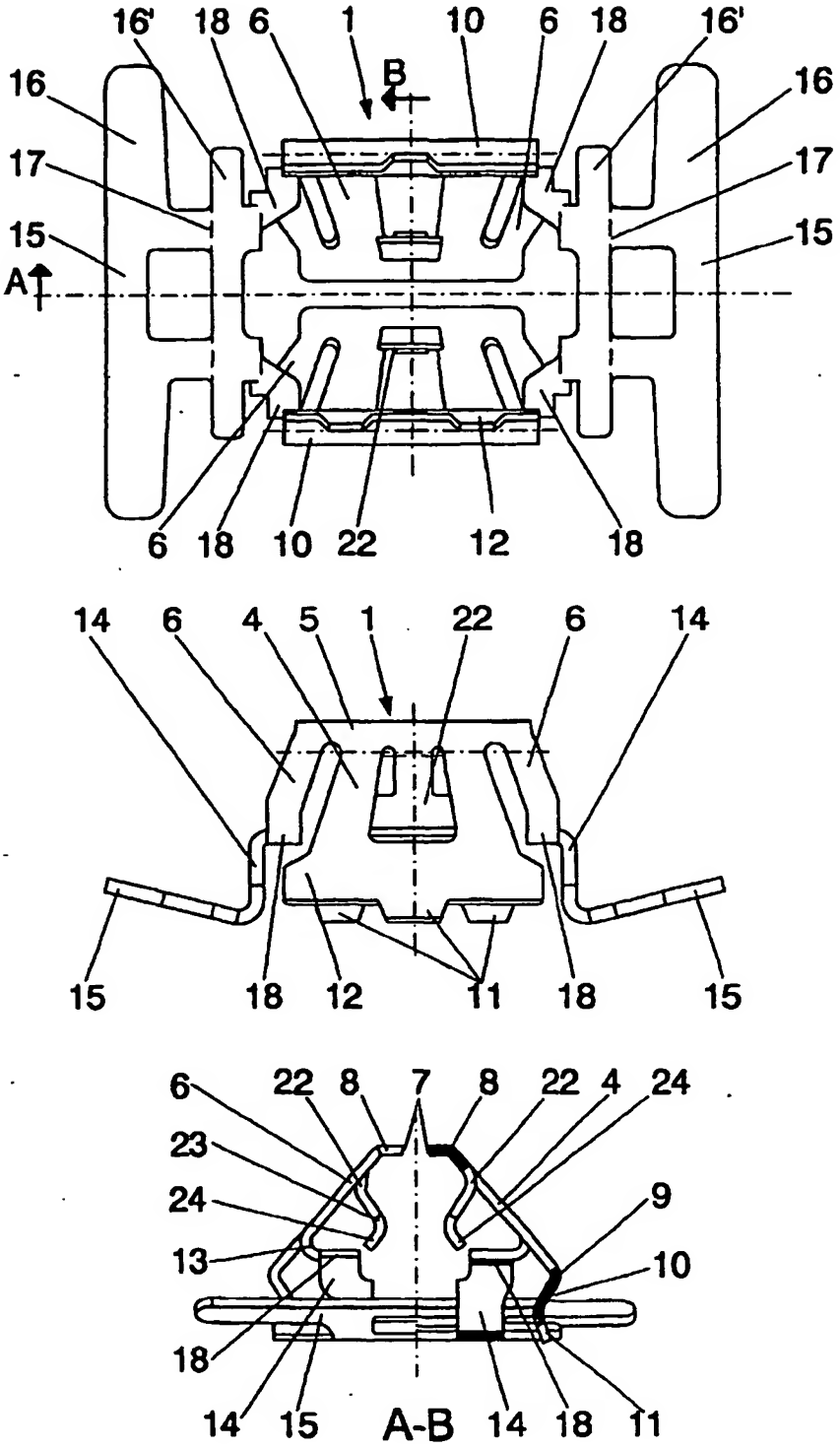
16'
18
6
1
10
6
18
16'
B
16
16
17
17
15
15
A
6
18
10
22
12
18
14
6
4
5
1
22
6
14
15
18
12
11
18
15
6
22
8
7
8
22
4
24
23
24
9
13
10
18
14
15
A-B
14
18
11

Fig. 1

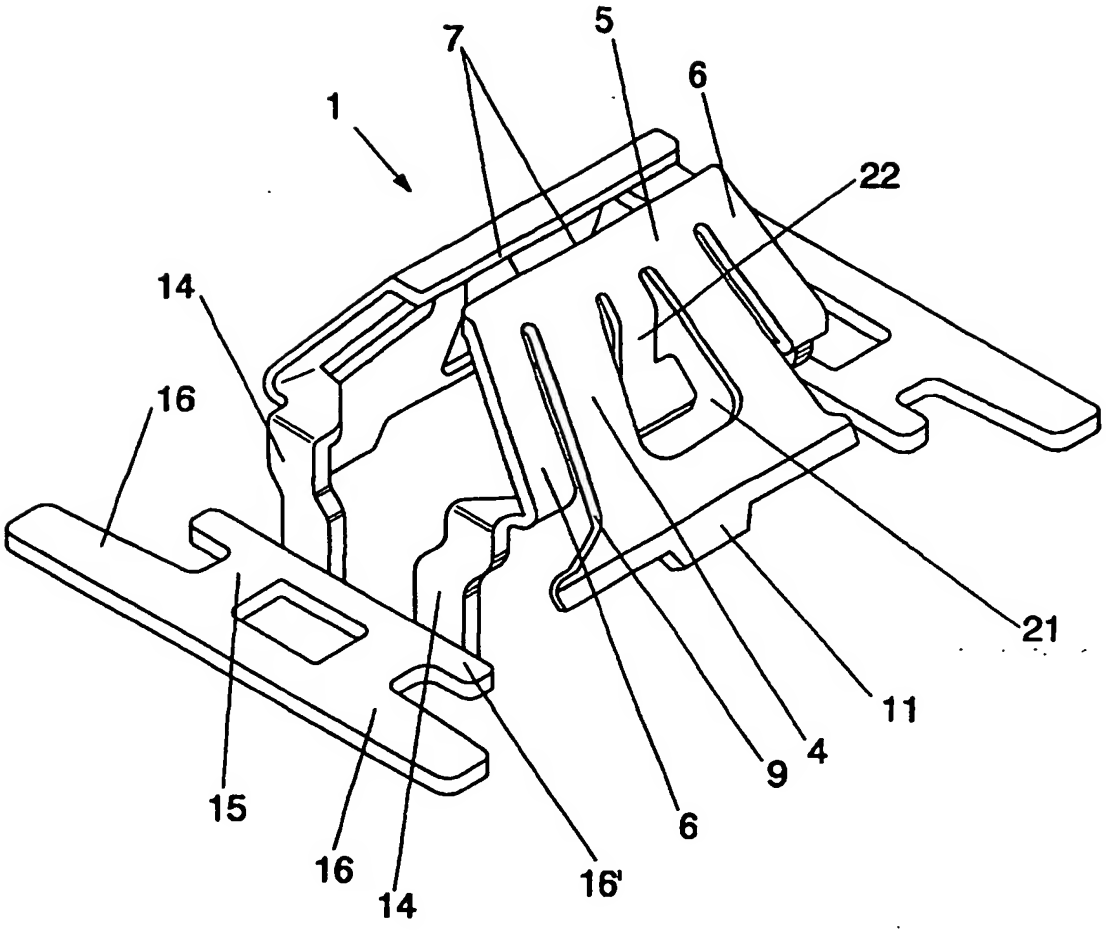

Fig. 2

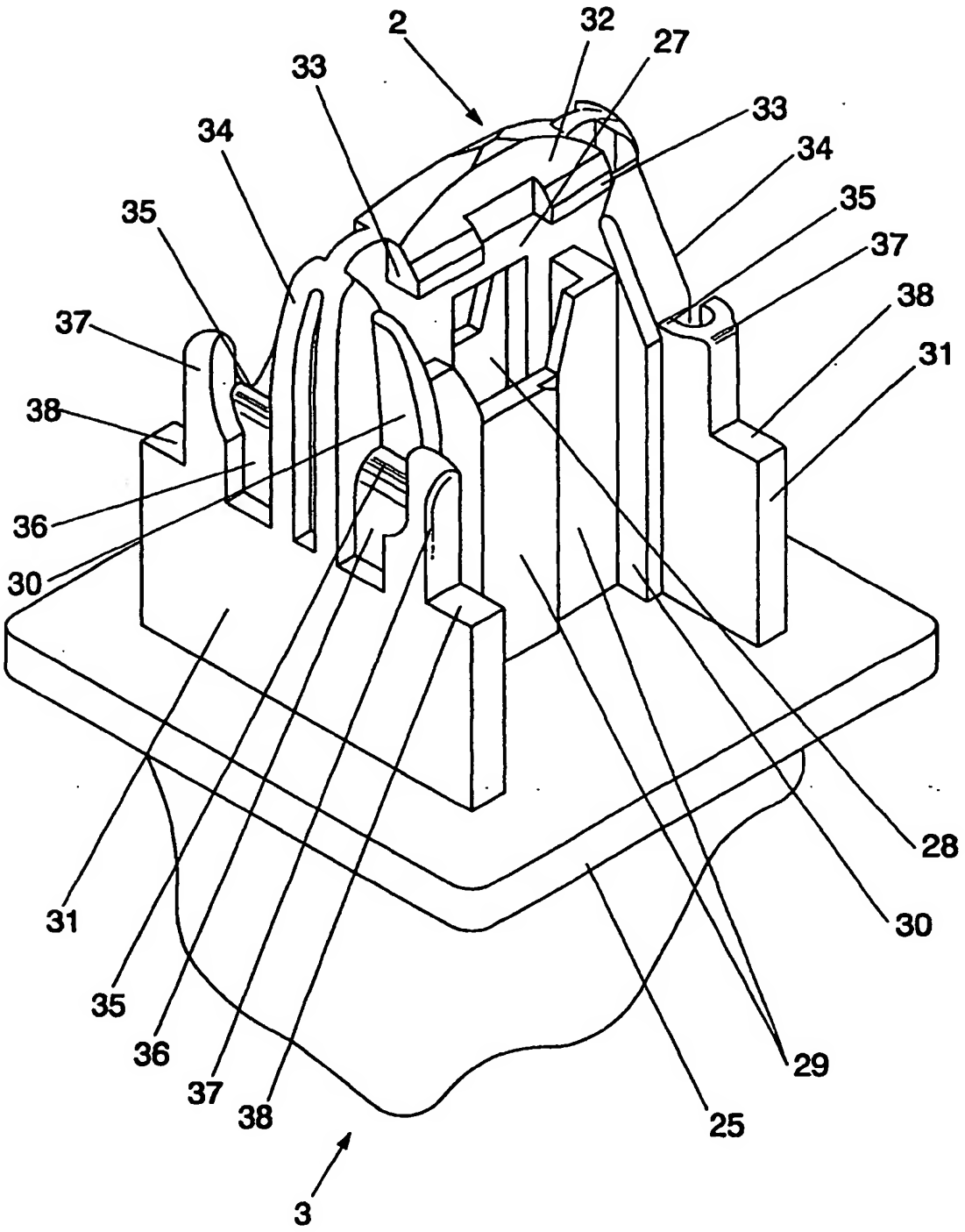

Fig. 3

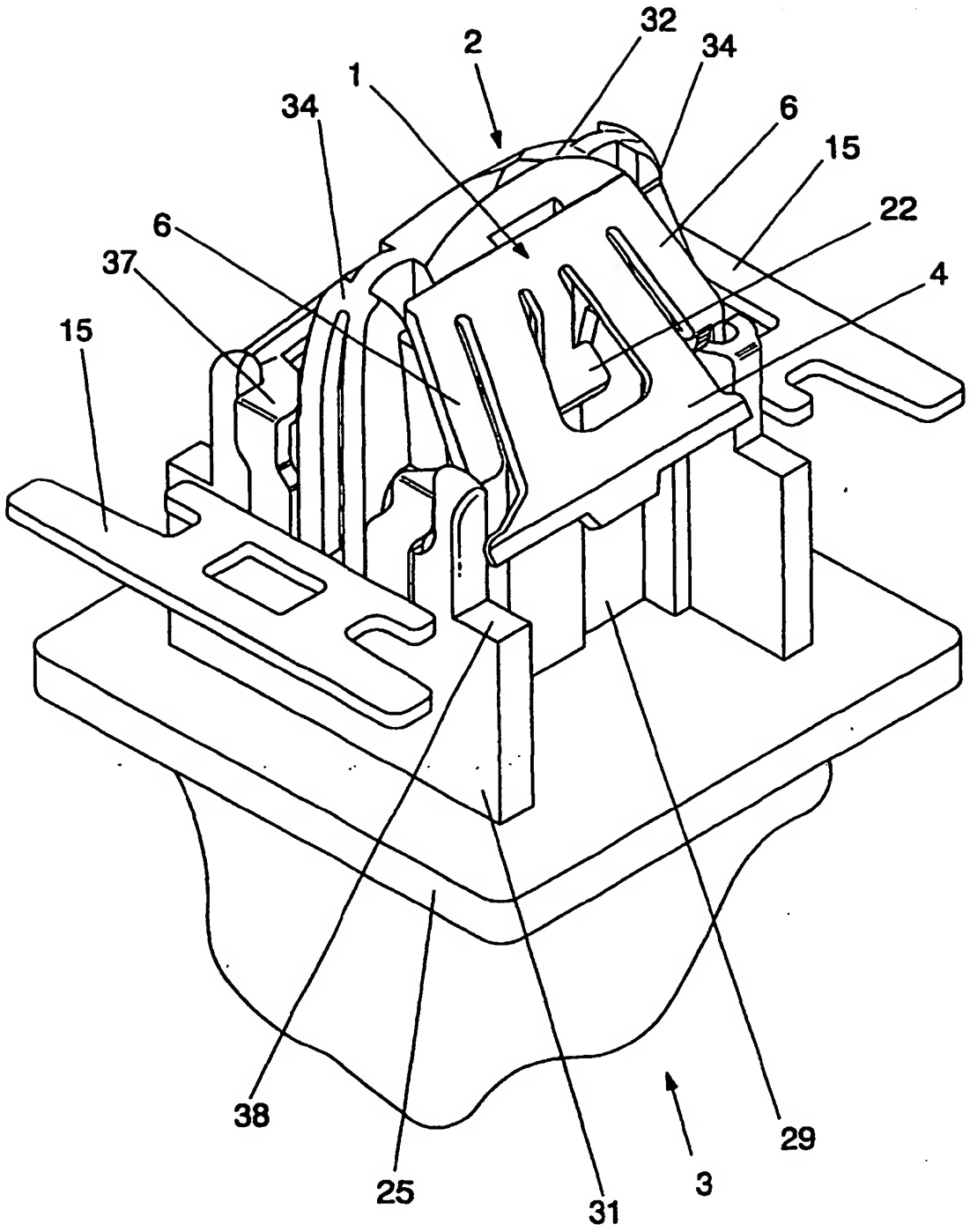

Fig. 4

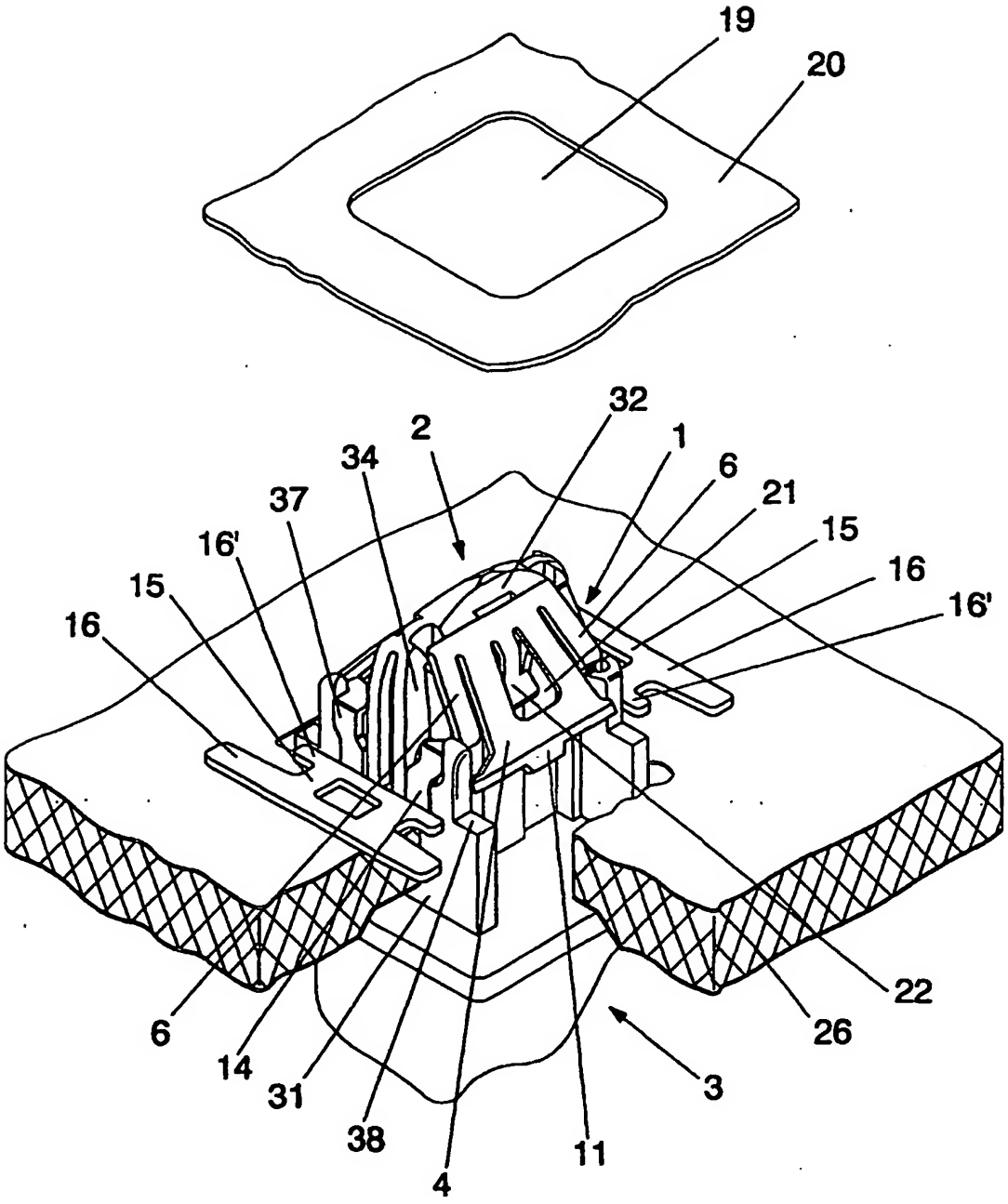

Fig. 5

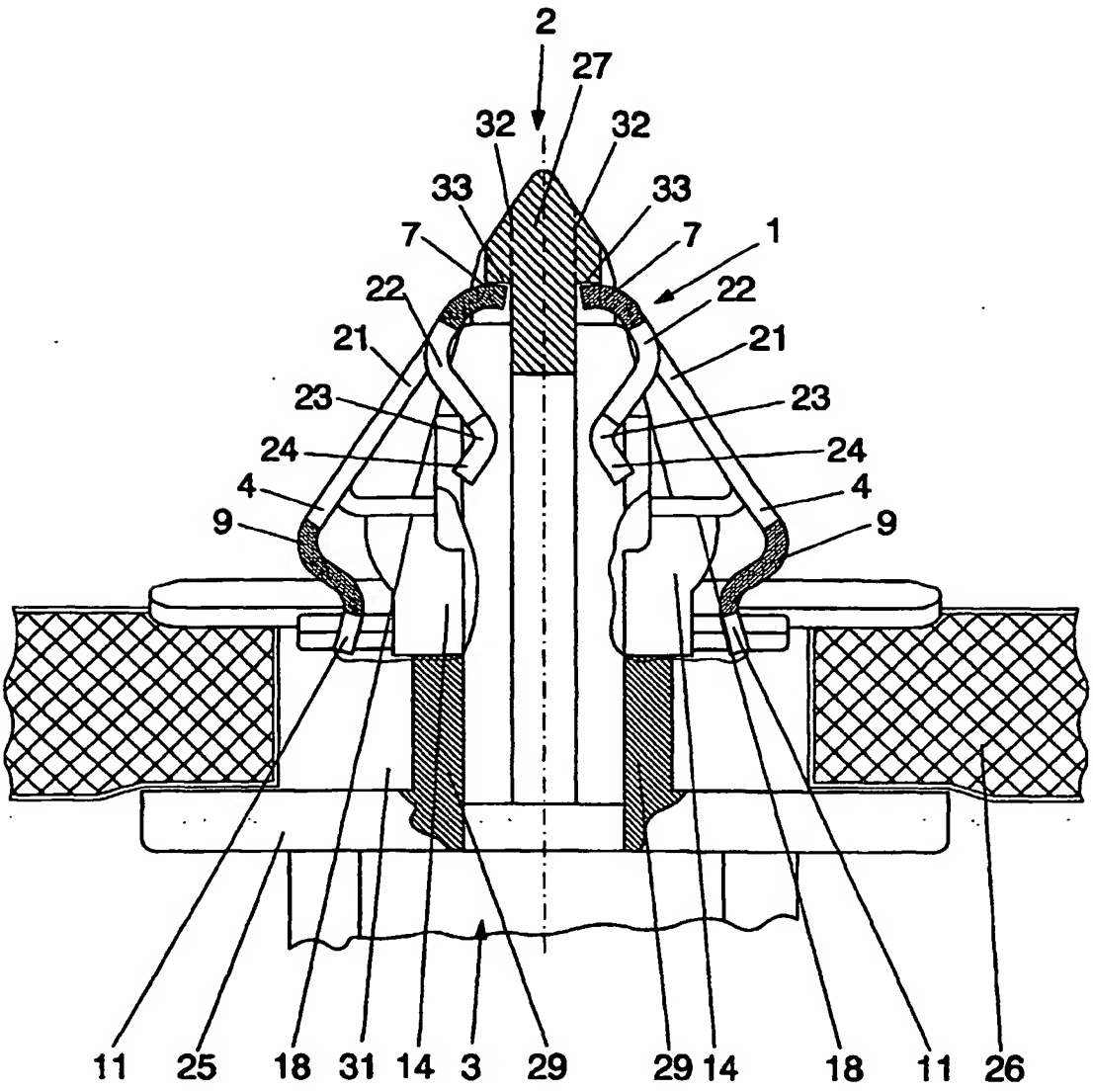
2
27
32
32
33
33
7
7
1
22
22
21
21
23
23
24
24
4
4
9
9
11
25
18
31
14
3
29
29
14
18
11
26

Fig. 6

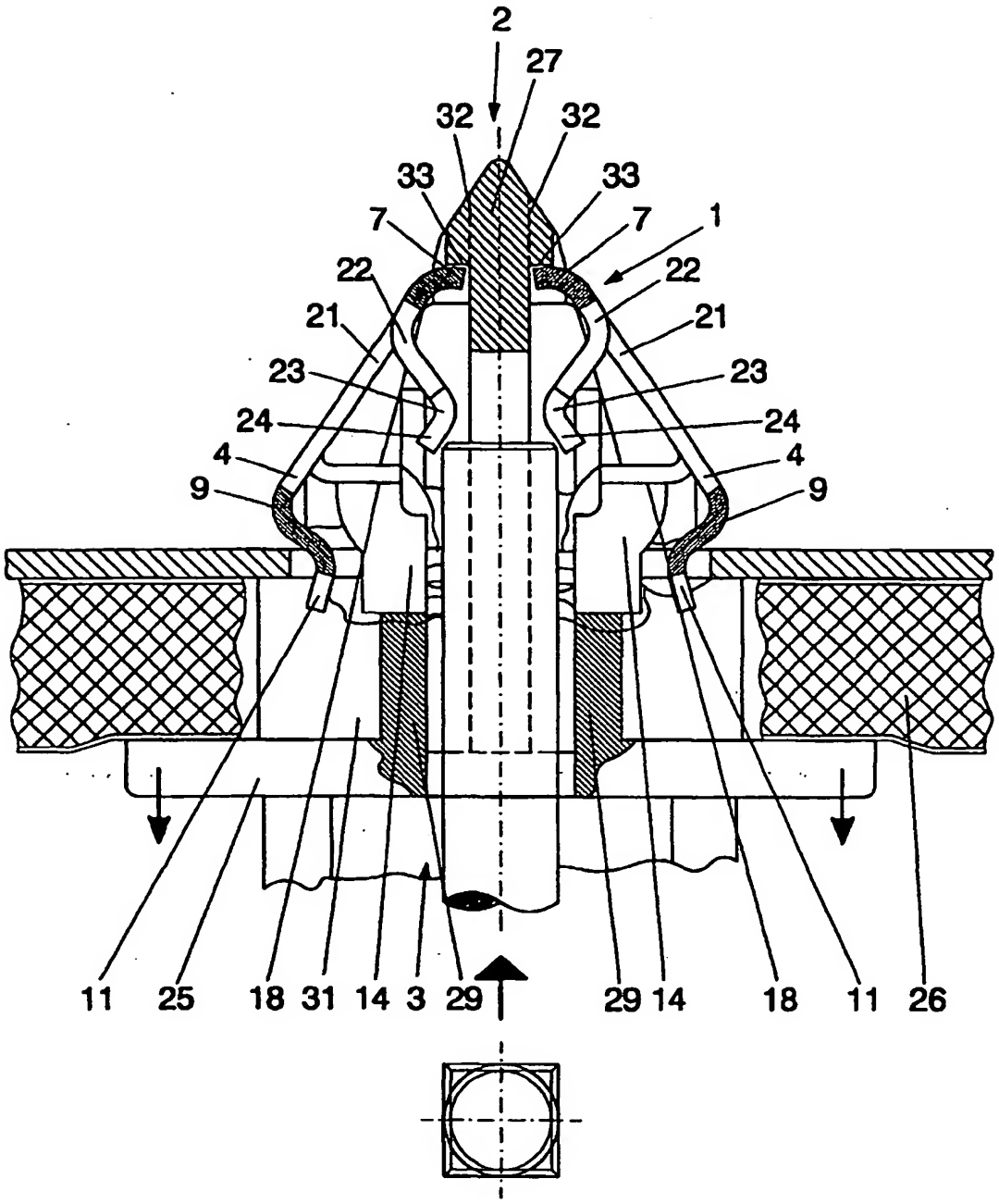
2
27
32
32
33
33
7
7
1
22
22
21
21
23
23
24
24
4
4
9
9
11
25
18
31
14
3
29
29
14
18
11
26

Fig. 7

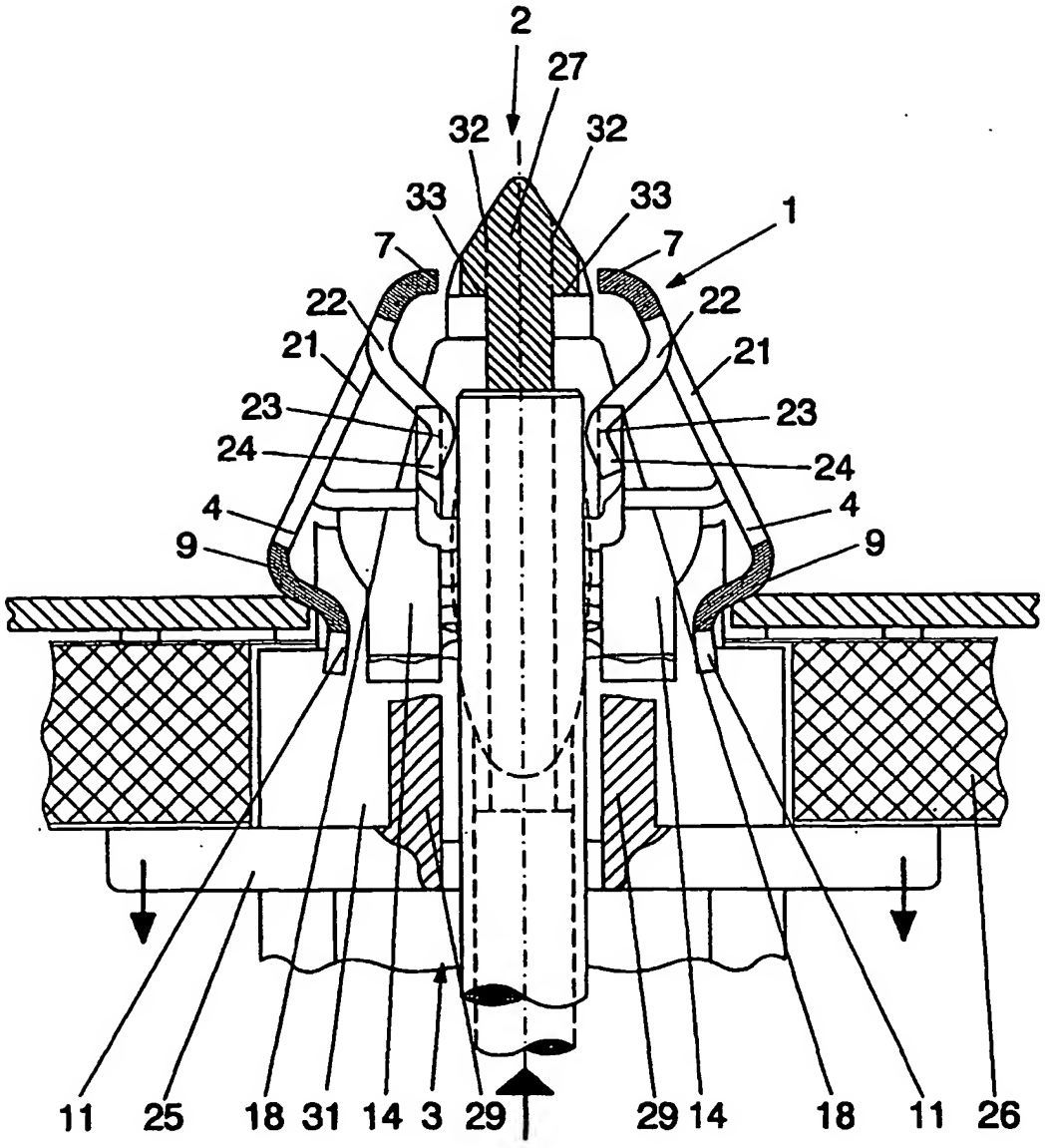
2
27
32
32
33
33
1
7
7
22
22
21
21
23
23
24
24
4
4
9
9
11
25
18
31
14
3
29
29
14
18
11
26

Fig. 8

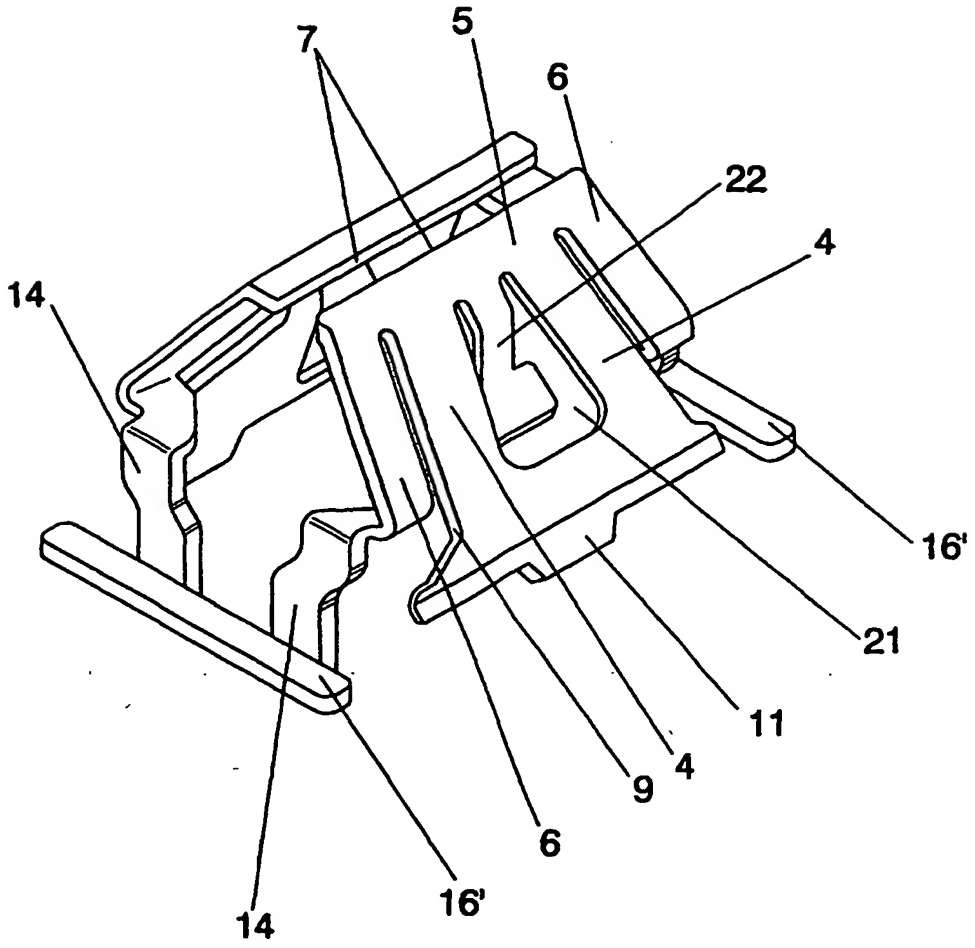

Fig. 9

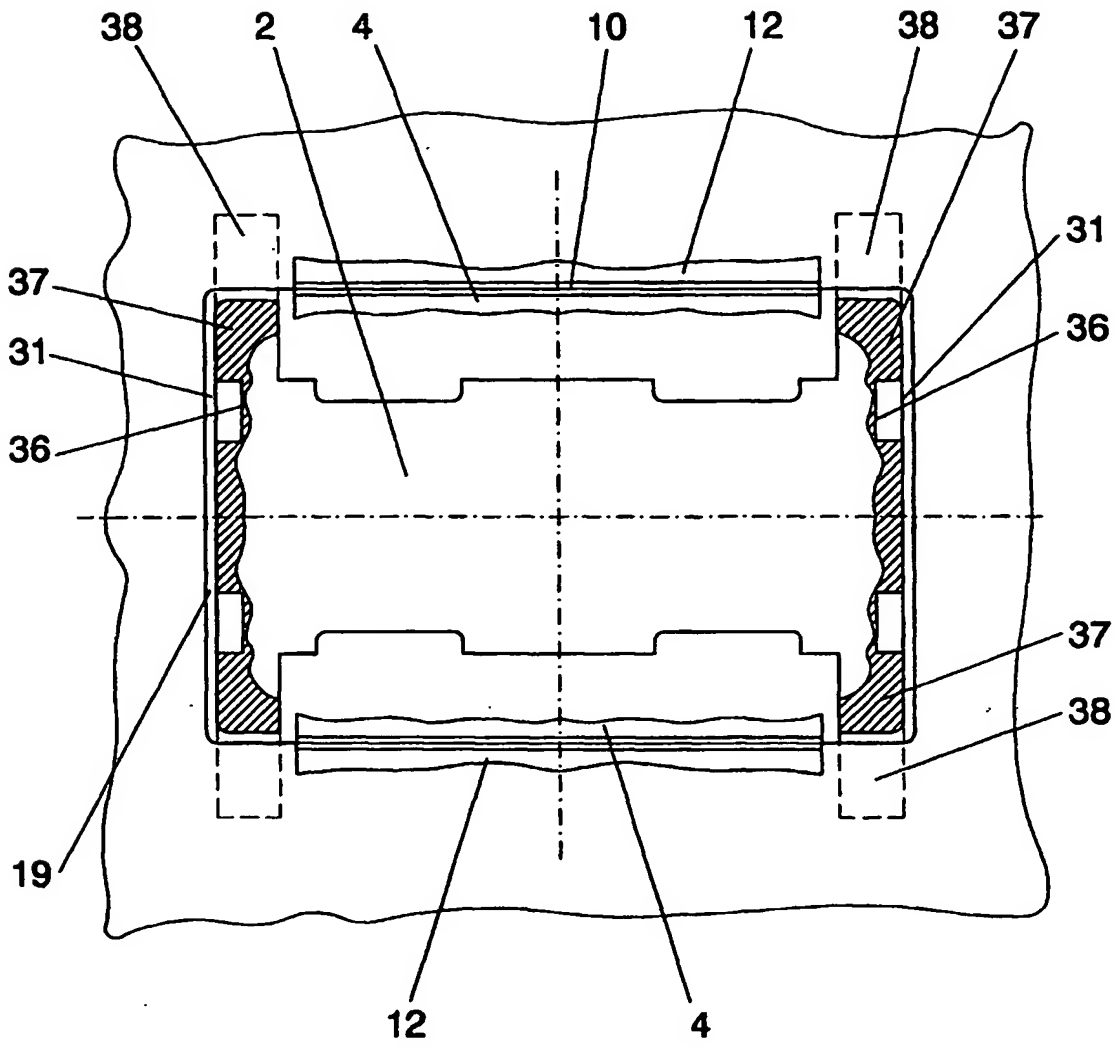

Fig. 10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES 01/00106

A. CLASSIFICATION OF SUBJECT MATTER
IPC7 F16B 5/06, B60R 13/02
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC7 F16B 5/06, B60R 13/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
CIBEPAT, EPODOC, PAJ, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 98 48179 A (IRAUSA INGENIERIA, S.A.) 29 October 1998 (29.10.98) page 18, line 11 – page 21, line 26, figures 12-15	1,3-5
A	EP 0 743 461 A (ELTA PLASTICS Ltd.) 20 November 1996 (20.11.96) the whole document	1, 3
A	US 5 533 237 A (HIGGINS) 09 July 1996 (09.07.96) abstract, figures 1, 2	1, 3
A	EP 0 696 530 A (MORTON INTERNATIONAL, INC.) 14 February 1996 (14.02.96) column 2, line 45 – column 4, line 5, figures 1, 2	1, 4
A	US 5 186 517 A (GILMORE et al.) 16 February 1993 (16.02.93) column 2, line 54 – column 4, line 30, figures 1 – 5	1
A	WO 99 04996 A (UT AUTOMOTIVE DEARBORN, INC.) 04 February 1999 (04.02.99) figures	1

☐ Further documents are listed in the continuation of box C. ☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 June 2000 (15.06.00)	22 June 2000 (22.06.00)
Name and mailing address of the ISA S.P.T.O	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No
PCT/ ES 00/ 00106

Patent document Cited in search report	Publication date	Patent family member(s)	Publication date
WO 98 48179 A	29.10.1998	CA 2 259 231 A EP 0 908 633 A ES 2 138 528 A	29.10.1998 14.04.1999 01.01.2000
EP 0 743 461 A	20.11.1996	GB 2 300 878 AB	20.11.1996
US 5 533 237 A	09.07.1996	NONE	
EP 0 696 530 A	14.02.1996	US 5 403 034 A DE 69 507 400 D	04.04.1995 04.03.1999
US 5 186 517 A	16.02.1993	NONE	
WO 99 04996 A	04.02.1999	US 6 021 986 A	08.02.2000

Form PCT/ISA/210 (patent family annex) (July 1992)